CLAIMS

1

2   1.   A method of creating one or more real-time interactive control and

3   communication software objects for use in connection with a computer and a machine

4   which communicate according to a standard communication protocol for process control,

5   the method comprising:

6   producing a display module which displays a graphical representation of a user

7   interface of the machine on a display of the computer;

8   associating the graphical representation of the user interface with at least one

9   control signal;

10   producing a control module to examine the graphical representation of the user

11   interface and the associated control signal;

12   producing a communication module to communicate the associated control signal

13   using the standard communication protocol for process control;

14   producing a framework module to interconnect functionally the display module,

15   the control module, and the communication module; and

16   merging the framework module, the display module, the control module, and the

17   communication module to create the one or more real-time interactive control and

18   communication software objects.

1   2.   The method of claim 1 wherein the step of producing the communication module

2   comprises producing the communication module to communicate using the standard

3   communication protocol for process control which comprises the Object linking and

4   embedding for Process Control (OPC) protocol.

1   3.   The method of claim 1 wherein the merging step comprises merging to create the

2   one or more real-time interactive control and communication software objects which

3   comprise objects insertable using standard object insertion techniques.

1   4.   The method of claim 1 wherein the merging step comprises merging to create the

2   real-time interactive control and communication software objects which comprise

3   ActiveX control objects.

5.   The method of claim 1 wherein the step of producing the control module comprises producing the control module to examine the graphical representation of the user interface and the associated control signal periodically.

6.   The method of claim 1 wherein the step of producing the control module comprises producing the control module to examine the graphical representation of the user interface and the associated control signal when a change in the graphical representation of the user interface is detected.

7.   The method of claim 1 wherein the step of producing the control module comprises producing the control module to examine the graphical representation of the user interface and the associated control signal when a change in the associated control signal is detected.

8.   The method of claim 1 wherein at least one of the producing steps comprises utilizing a pre-fabricated software module.

9.   The method of claim 1 wherein the step of producing the display module comprises producing the display module which displays the graphical representation of the user interface of the machine utilizing a pre-fabricated software image of the graphical representation.

10.   The method of claim 1 wherein the merging step comprises compiling the framework module into a compiled module and linking the compiled module with the display module, the control module, and the communication module to create the one or more real-time interactive control and communication software objects.

11.   The method of claim 1 wherein the merging step comprises interpreting the framework module, the display module, the control module, and the communication module to create the one or more real-time interactive control and communication software objects.

12.   A computer-readable medium on which is stored a computer program for creating one or more real-time interactive control and communication software objects for use in connection with a computer and a machine which communicate according to a standard communication protocol for process control, the computer program comprising instructions, which, when executed by a computer, perform the steps of:

41

6   producing a display module which displays a graphical representation of a user

7   interface of the machine on a display of the computer;

8   associating the graphical representation of the user interface with at least one

9   control signal;

10   producing a control module to examine the graphical representation of the user

11   interface and the associated control signal;

12   producing a communication module to communicate the associated control signal

13   using the standard communication protocol for process control;

14   producing a framework module to interconnect functionally the display module,

15   the control module, and the communication module; and

16   merging the framework module, the display module, the control module, and the

17   communication module to create the one or more real-time interactive control and

18   communication software objects.

1   13.   The computer-readable medium of claim 12, wherein the communication module

2   communicates using the Object linking and embedding for Process Control (OPC)

3   protocol.

1   14.   The computer-readable medium of claim 12, wherein the real-time interactive

2   control and communication software objects comprise objects insertable using standard

3   object insertion techniques.

1   15.   The computer-readable medium of claim 12, wherein the real-time interactive

2   control and communication software objects comprise ActiveX control objects.

1   16.   The computer-readable medium of claim 12, wherein the control module

2   examines the graphical representation of the user interface and the associated control

3   signal periodically.

1   17.   The computer-readable medium of claim 12, wherein the control module

2   examines the graphical representation of the user interface and the associated control

3   signal when a change in the graphical representation of the user interface is detected.

1   18.   The computer-readable medium of claim 12, wherein the control module

2   examines the graphical representation of the user interface and the associated control

3   signal when a change in the associated control signal is detected.

1 19. The computer-readable medium of claim 12 wherein the display module utilizes a

2 pre-fabricated software image of the graphical representation.

1 20. The computer-readable medium of claim 12 wherein the framework module is

2 compiled and linked with the display module, the control module, and the communication

3 module to create the one or more real-time interactive control and communication

4 software objects.

1 21. The computer-readable medium of claim 12 wherein the framework module, the

2 display module, the control module, and the communication module are interpreted to

3 create the one or more real-time interactive control and communication software objects.